Algebra 2 Name_____

Test Review 6.1-6.5

Date_____ Period____

Simplify each expression.

1) $(-5m^3 + 6m^2 + 8) + (-7 + m^3 - 4m^2)$

2) $(-5n - 4n^3 + 4n^4) - (-n^3 - 6n^4 - 4n)$

Find each product.

3) $8(m - 7)$

4) $(4r + 2)(6r - 5)$

5) $(8x + 7)(-x^2 + 2x - 5)$

6) $(5b - 8)^2$

7) $(n + 4)^2$

Describe the end behavior of each function.

8) $f(x) = -x^2 - 6x - 4$

9) $f(x) = -x^5 + 2x^3 - x$

10) $f(x) = 2x^2 - 6$

Is the function a polynomial? If it is, clearly state the degree and leading coeeficient. If it is not, explain why not.

11) $-7x^3 + 8x^2 + 9x^4 + 10x + 1 + 7x^6$

12) $-10 - 6r^2 - r^4 - r^3$

13) $4 + b^3 - 8\sqrt{b}$

Factor each completely.

14) $x^3 + 4x^2 - 6x - 24$

15) $5v^3 - 20v^2 + 6v - 24$

16) $192x^3 - 3$

17) $16m^3 + 250$

18) $36x^4 - 64$

19) $40u^4 + 204u^2 + 224$

Factor each and find all roots. Show ALL work.

20) $x^2 - 4x - 5 = 0$

21) $x^2 - 2x - 8 = 0$

22) $x^2 + 3x - 4 = 0$

Divide.

23) $(n^4 - 44n^2 - 37n + 7) \div (n - 7)$

24) $(x^4 - 2x^3 - 25x^2 - 11x - 34) \div (x + 4)$

25) $(n^3 - 13n^2 + 43n - 30) \div (n - 8)$

26) $\dfrac{5b^3 - 3b^2 - 9b}{b^2 + 1}$

Evaluate each function at the given value.

27) $f(m) = m^4 - 32m^2 + 18m - 33$ at $m = -6$

28) $f(a) = a^3 - a^2 - 15a + 13$ at $a = -4$

29) $f(a) = a^4 + 6a^3 + 9a^2 + 5a + 13$ at $a = -3$

Algebra 2 Name_____

Test Review 6.1-6.5

Date_____ Period____

Simplify each expression.

1) $(-5m^3 + 6m^2 + 8) + (-7 + m^3 - 4m^2)$

$-4m^3 + 2m^2 + 1$

2) $(-5n - 4n^3 + 4n^4) - (-n^3 - 6n^4 - 4n)$

$10n^4 - 3n^3 - n$

Find each product.

3) $8(m - 7)$

$8m - 56$

4) $(4r + 2)(6r - 5)$

$24r^2 - 8r - 10$

5) $(8x + 7)(-x^2 + 2x - 5)$

$-8x^3 + 9x^2 - 26x - 35$

6) $(5b - 8)^2$

$25b^2 - 80b + 64$

7) $(n + 4)^2$

$n^2 + 8n + 16$

Describe the end behavior of each function.

8) $f(x) = -x^2 - 6x - 4$

$f(x) \to -\infty$ as $x \to -\infty$
$f(x) \to -\infty$ as $x \to +\infty$

9) $f(x) = -x^5 + 2x^3 - x$

$f(x) \to +\infty$ as $x \to -\infty$
$f(x) \to -\infty$ as $x \to +\infty$

10) $f(x) = 2x^2 - 6$

$f(x) \to +\infty$ as $x \to -\infty$
$f(x) \to +\infty$ as $x \to +\infty$

Is the function a polynomial? If it is, clearly state the degree and leading coeeficient. If it is not, explain why not.

11) $-7x^3 + 8x^2 + 9x^4 + 10x + 1 + 7x^6$

sixth degree polynomial with six terms

12) $-10 - 6r^2 - r^4 - r^3$

quartic polynomial with four terms

13) $4 + b^3 - 8\sqrt{b}$

quintic trinomial

Factor each completely.

14) $x^3 + 4x^2 - 6x - 24$

$(x^2 - 6)(x + 4)$

15) $5v^3 - 20v^2 + 6v - 24$

$(5v^2 + 6)(v - 4)$

16) $192x^3 - 3$

$3(4x - 1)(16x^2 + 4x + 1)$

17) $16m^3 + 250$

$2(2m + 5)(4m^2 - 10m + 25)$

18) $36x^4 - 64$

$4(3x^2 + 4)(3x^2 - 4)$

19) $40u^4 + 204u^2 + 224$

$4(2u^2 + 7)(5u^2 + 8)$

Factor each and find all roots. Show ALL work.

20) $x^2 - 4x - 5 = 0$

Factors to: $(x + 1)(x - 5) = 0$
Roots: $\{-1, 5\}$

21) $x^2 - 2x - 8 = 0$

Factors to: $(x - 4)(x + 2) = 0$
Roots: $\{4, -2\}$

22) $x^2 + 3x - 4 = 0$

Factors to: $(x + 4)(x - 1) = 0$
Roots: $\{-4, 1\}$

Divide.

23) $(n^4 - 44n^2 - 37n + 7) \div (n - 7)$

$n^3 + 7n^2 + 5n - 2 - \frac{7}{n - 7}$

24) $(x^4 - 2x^3 - 25x^2 - 11x - 34) \div (x + 4)$

$x^3 - 6x^2 - x - 7 - \frac{6}{x + 4}$

25) $(n^3 - 13n^2 + 43n - 30) \div (n - 8)$

$n^2 - 5n + 3 - \frac{6}{n - 8}$

26) $\frac{5b^3 - 3b^2 - 9b}{b^2 + 1}$

$5b - 3 + \frac{9b}{b^2 + 1}$

Evaluate each function at the given value.

27) $f(m) = m^4 - 32m^2 + 18m - 33$ at $m = -6$

3

28) $f(a) = a^3 - a^2 - 15a + 13$ at $a = -4$

-7

29) $f(a) = a^4 + 6a^3 + 9a^2 + 5a + 13$ at $a = -3$

-2